

Remarks

Claims 1-20 are pending in the application and were rejected. Reconsideration of the claims is respectfully requested. No new matter has been added.

Rejection Under 35 U.S.C. § 102

Claims 1-7 and 9-15 were rejected under § 102(e) as being anticipated by U.S. Patent No. 6,960,152 issued to Aoki (hereinafter “Aoki ‘152”). Independent claims 1 and 13 and their respective dependent claims are discussed separately below.

A *prima facie* case has not been established for the rejection of claim 1. Claim 1 recites a method of controlling charging of a power source of a hybrid vehicle. The method comprises “determining a maximum output torque level of the primary power source; determining a state of charge of the secondary power source; determining a charge torque modifier value based on the maximum output torque level and the state of charge; determining a target torque level for the electrical machine based on the charge torque modifier value; and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source.” Aoki ‘152 does not disclose a method of controlling charging of a power source of a hybrid vehicle as claimed for the following reasons.

First, Aoki ‘152 does not disclose “determining a maximum output torque level of the primary power source.” In the Office Action the Examiner pointed to column 11, lines 32-49 and column 22, lines 29-47 for support (see Office Action, page 2). Column 11, lines 32-49 discloses “engine torque TE1 to TE3” which are not maximum output torque levels as is clearly shown in Figure 12 (note the higher torque curves in Figure 12). Moreover, there is absolutely no disclosure that engine torque is related to charge control. Similarly column 22, lines 29-47 discuss a “curve L where the engine 11 reaches maximum engine efficiency” and not a maximum output torque level (again note the higher torque curves in Figure 12). Moreover, there is absolutely no disclosure of any relationship between any torque level (let

alone a maximum output torque level) and controlling charging of a power source. Thus, Aoki '152 completely fails to disclose this claim limitation.

Second, Aoki '152 does not disclose "determining a state of charge of the secondary power source" in relation to controlling charging a power source of a hybrid vehicle. In the Office Action the Examiner pointed to column 8, lines 35-38 for support. Column 8, lines 35-38 discloses "a battery remaining charge SOC" but does not employ it in controlling charging of a power source. Instead, Aoki '152 discloses that battery remaining charge is ultimately used as an input in a vehicle requirement output PO calculation, which again is used to determine an operation point of an engine along "curve L where the engine 11 reaches maximum engine efficiency" (see column 11, lines 23-28 and 32-43). Thus, Aoki '152 completely fails to relate state of charge to controlling charging of any power source.

Third, Aoki '152 does not disclose "determining a charge torque modifier value based on the maximum output torque level and the state of charge." Indeed, Aoki '152 is silent regarding this claim limitation. Moreover, the four sections of Aoki '152 referenced by the Examiner do not disclose or remotely suggest this claim limitation or any relationship to the controlling charging of any power source. For example, column 2, lines 19-36 discloses "a motor that compensates for an excessive or a deficient amount of engine torque" but does not disclose any value, let alone a charge torque modifier value, that is based on a maximum output torque level [of a primary power source] and a state of charge [of a secondary power source]. Column 11, lines 15-64 discloses "calculating a vehicle requirement output PO" by "adding the driver requirement output PD and the battery charge/discharge requirement output PB" (column 11, lines 27-30). None of these outputs is based on a maximum output torque level and a state of charge. Instead, the driver requirement output PD is calculated by "multiplying the vehicle requirement torque TO*" that is "preset to correspond with the accelerator pedal position AP, the brake pedal position BP, and the vehicle speed V" by the vehicle speed V" (see column 10, lines 56-59 and column 11, lines 11-12). Similarly, the battery charge/discharge requirement output PB is "based on the battery remaining charge SOC" (column 11, lines 19-22) but is not based on a maximum output torque level. Column

22, lines 39-59 discloses engine target torque TE^* , engine torque TE , vehicle requirement torque TO^* , and drive motor torque TM ; however, there is no disclosure of a maximum output torque level, a state of charge, or any determination based thereon. Column 24, lines 38-55 discloses a drive motor target torque TM^* , engine torque TE , and vehicle requirement torque TO^* ; however, there is no disclosure of a maximum output torque level, a state of charge, or any determination based thereon. Thus, Aoki '152 completely fails to disclose this claim limitation.

Fourth, since there is no disclosure of a charge torque modifier value as discussed above, it logically follows that can be no disclosure of “determining a target torque level for the electrical machine based on the charge torque modifier value” or “driving the electrical machine at the target torque level with the primary power source to charge the secondary power source” as recited in claim 1. Moreover, the passages cited by the Examiner simply do not disclose or remotely suggest these claim limitations.

In summary, there is no disclosure in Aoki '152 of any steps of claim 1. Thus, a *prima facie* case has not been established and Applicants respectfully request that the rejection of claim 1 be withdrawn. Since claims 2-7 depend on claim 1, Applicants respectfully request that the rejection of these claims be withdrawn for the same reasons.

Even if a proper rejection was made for claim 1, a *prima facie* case has not been established for the rejection of claim 2. Claim 2 recites that “the step of determining the maximum output torque level further includes determining whether the primary power source is providing output torque.” Aoki '152 does not recite the limitations of claim 2. As previously discussed, Aoki '152 does not even disclose a maximum output torque level of a primary power source. Therefore, it cannot logically disclose additional limitations associated with determining a maximum output torque level. Moreover, the passage cited by the Examiner discloses “driver motor maximum torque TM_{max} ” which relates to drive motor 25, and not a primary power source. Applicants further note that drive motor 25 cannot properly

be considered a power source in accordance with the preamble of claim 1. For these reasons, a *prima facie* case has not been established and this rejection must be withdrawn.

Even if a proper rejection was made for claim 1, a *prima facie* case has not been established for the rejection of claim 3. Claim 3 recites that “the step of determining the charge torque modifier value further comprises comparing a state of charge of the secondary power source to a threshold value and selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value.” Aoki ‘152 does not recite comparing a state of charge of the secondary power source to a threshold value, selecting a first adjustment value if the state of charge is less than the threshold value, or selecting a second adjustment value if the state of charge is not less than the threshold value. Indeed, Aoki ‘152 is silent regarding first and second adjustment values or any values that are selected based on comparison of state of charge and threshold values. Indeed, nothing in the lengthy passage cited by the Examiner remotely suggests these claim limitations. Applicants request that the Examiner point with particularity to any drawing element, variable, or term in Aoki ‘152 that could possibly be considered to be these claim limitations in the next communication if this rejection is to be maintained. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

Even if a proper rejection was made for claim 3, a *prima facie* case has not been established for the rejection of claim 4. Claim 4 recites that “the first adjustment value is greater than the second adjustment value.” Aoki ‘152 does not recite a first adjustment value that is greater than the second adjustment value. Indeed, there is no disclosure of first and second adjustment values as claimed, let alone a first adjustment value that is greater than a second adjustment value. Moreover the passages cited by the Examiner do not remotely disclose these limitations. Furthermore, the Examiner’s statement that “there are multiple adjustment values wherein as the SOC becomes less, the charge/discharge requirement (which affects the charge torque modifier) becomes greater is simply not explicitly or implicitly disclosed in Aoki ‘152. In addition, the Examiner’s statement does not address each and every

element of claim 4, which alone is sufficient to negate the establishment of a *prima facie* case. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

Even if a proper rejection was made for claim 3, a *prima facie* case has not been established for the rejection of claim 5. Claim 5 recites that “the first adjustment value is a constant based on the maximum output torque level.” Aoki ‘152 does not recite a first adjustment value that is a constant based on the maximum output torque level. In the Office Action, the Examiner did not point with particularity to any element of Aoki ‘152 as being a first adjustment value, which is sufficient to negate the establishment of a *prima facie* case. Moreover, the passages cited by the Examiner do not disclose or remotely suggest any value that is based on a maximum output torque level of a primary power source (since there is no maximum output torque value as previously discussed), let alone a value that is also a constant. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

Even if a proper rejection was made for claim 3, a *prima facie* case has not been established for the rejection of claim 6. Claim 6 recites that “the second adjustment value is based on the maximum output torque level and the state of charge.” Aoki ‘152 does not recite a second adjustment value that is based on the maximum output torque level and the state of charge. In the Office Action, the Examiner did not point with particularity to any element of Aoki ‘152 as being a second adjustment value, which is sufficient to negate the establishment of a *prima facie* case. Moreover, the passages cited by the Examiner do not disclose any value that is based on a maximum output torque level of a primary power source and a state of charge. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

Even if a proper rejection was made for claim 3, a *prima facie* case has not been established for the rejection of claim 7. Claim 7 recites that “the second adjustment value decreases linearly as the state of charge increases.” Aoki ‘152 does not recite a second adjustment value that decreases linearly as the state of charge increases. Indeed, the Examiner did not point with particularity to any element of Aoki ‘152 as being a second adjustment

value, which is sufficient to negate the establishment of a *prima facie* case. Moreover, Aoki '152 is silent regarding any value that decreases linearly as the state of charge increases. For example, Aoki '152 discloses that "when the battery state of charge becomes less, the battery charge/discharge requirement output PB becomes greater" (column 29, lines 4-6), which is the opposite of the relationship disclosed in claim 7. Furthermore, there is absolutely no support for the Examiner's contention that the "linear" term is reasonably met since Aoki '152 does not disclose that all outputs/torques are based on linear equations. For these reasons, a *prima facie* case has not been established and this rejection must be withdrawn.

A *prima facie* case has not been established for the rejection of claim 13. Claim 13 recites a method of controlling charging of a power source of a hybrid vehicle. The method comprises "determining whether the engine is running; determining whether the electrical machine is being driven by the engine and is charging the power source; determining a maximum output torque level of the engine; comparing a state of charge of the power source to a threshold value; selecting an adjustment value based on an amount of torque available to charge the power source; calculating a charge torque modifier value based on the adjustment value; determining a target torque level for the electrical machine based on the charge torque modifier value; and driving the electrical machine at the target torque level with the engine to charge the power source; wherein the charge torque modifier value is a constant if the state of charge is less than the threshold value and the charge torque modifier value decreases as the state of charge increases if the state of charge is greater than the threshold value." Aoki '152 does not disclose a method of controlling charging of a power source of a hybrid vehicle as claimed.

In the Office Action, the Examiner referenced the arguments presented for claims 1-7 to support for the rejection of claim 13 (see Office Action, page 4). Applicants therefore state that the arguments presented above with respect to claims 1-7 are also applicable to any identical limitations in claim 13. In addition, claim 13 contains many limitations that are not recited in claims 1-7 and thus the Examiner has not addressed each and every element of claim 13, which is automatically sufficient to negate the establishment of a *prima facie* case.

For example, claims 1-7 and the Examiner's arguments do not include determining whether the engine is running, determining a maximum output torque level of the engine, selecting an adjustment value based on an amount of torque available to charge the power source; calculating a charge torque modifier value based on the adjustment value, or that the charge torque modifier value is a constant if the state of charge is less than the threshold value and the charge torque modifier value decreases as the state of charge increases if the state of charge is greater than the threshold value. In summary, Aoki '152 does not disclose each and every element of claim 13 and has the Examiner has not addressed each and every element of claim 13. Consequently, a *prima facie* case has not been established and Applicants respectfully request that the rejection of claim 13 be withdrawn. Since claims 14 and 15 depend on claim 13, Applicants respectfully request that the rejection of these claims be withdrawn for the same reasons.

Even if a proper rejection was established for claim 13, a *prima facie* case has not been established for the rejection of claim 14. In the Office Action, the Examiner referenced the arguments presented for claim 13 to support for the rejection of this claim (see Office Action, page 4). Claim 13 does not have the same limitations as claim 14 and the Examiner's arguments for claim 13 do not address each and every element of claim 14, which is sufficient to negate the establishment of a *prima facie* case. Indeed, Aoki '152 is silent regarding the limitations of claim 14. For these reasons, a *prima facie* case has not been established and the rejection of this claim must be withdrawn.

Even if a proper rejection was established for claim 13, a *prima facie* case has not been established for the rejection of claim 15. In the Office Action, the Examiner referenced the arguments presented for claim 1 to support for the rejection of this claim (see Office Action, page 4). Claim 1 does not have the same limitations as claim 15 and the Examiner's arguments for claim 1 do not address each and every element of claim 15, which is sufficient to negate the establishment of a *prima facie* case. Indeed, Aoki '152 is silent regarding the limitations of claim 15. For these reasons, a *prima facie* case has not been established and the rejection of this claim must be withdrawn.

Rejection Under 35 U.S.C. § 103

Claims 8 and 16-20 were rejected under § 103(a) as being unpatentable over U.S. Patent No. 6,960,152 issued to Aoki (hereinafter "Aoki '152"). Claims 8, 16 and 17-20 are discussed separately below

Claim 8 depends on claim 1. Consequently, a *prima facie* case has not been established for the rejection of this claim for the reasons previously discussed. Furthermore, Applicants traverse the Examiner's contention that the limitations of claim 8 are well known in the art. Indeed, it is not well known to express actual output torque of a primary power source as a percentage since sensors associated with torque measurement do not provide output torque signals as a percentage since they cannot detect a maximum output torque level nor are maximum output torque levels readily available as an input for computational assessment and verification. Having traversed the contention that the limitations of claim 8 are not based upon common knowledge, the Examiner is now required to provide documentary evidence in the next Office action if this rejection is to be maintained in accordance with MPEP 2144.03.

Claim 16 depends on claim 13. Consequently, a *prima facie* case has not been established for the rejection of this claim for the reasons previously discussed. Furthermore, Applicants traverse the Examiner's contention that the limitations of claim 13 are well known in the art. Indeed, maximum output torque levels are not readily available from torque sensors or other sources and therefore the data needed to express a maximum output torque level as a percentage in accordance with claim 16 is not readily available or well known in the art. Having traversed the contention that the limitations of claim 16 are not based upon common knowledge, the Examiner is now required to provide documentary evidence in the next Office action if this rejection is to be maintained in accordance with MPEP 2144.03.

A *prima facie* case has not been established for the rejection of claim 17. Claim 17 recites a method of controlling charging of a power source of a hybrid electric vehicle. The method comprises "determining a maximum output torque level of the primary power source; determining a state of charge of the secondary power source; comparing the state of charge to

a threshold value; selecting an adjustment value; determining a charge torque modifier value based on the adjustment value and an actual output torque of the primary power source expressed as a percentage of the maximum output torque level; determining a target torque level for the electrical machine based on the charge torque modifier value; and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source; wherein when the state of charge exceeds a threshold value the target torque level decreases linearly as the output torque of the primary power source increases to provide a consistent level of vehicle acceleration as the accelerator pedal is actuated.” Aoki ‘152 does not recite a method of controlling charging of a power source of a hybrid electric vehicle as recited in claim 17.

In the Office Action, the Examiner referenced the arguments for claims 1-7, 8, and 13 (see Office Action, page 5). Applicants therefore state that the arguments presented above with respect to claims 1-7, 8, and 13 are also applicable to any identical limitations in claim 17. In addition, claim 17 contains many limitations that are not recited in claims 1-7, 8 and 13. Thus the Examiner has not addressed each and every element of claim 17, which is automatically sufficient to negate the establishment of a *prima facie* case. Moreover, there is simply no disclosure that when the state of charge exceeds a threshold value the target torque level decreases linearly as the output torque of the primary power source increases to provide a consistent level of vehicle acceleration as the accelerator pedal is actuated. Indeed, there is no disclosure of any linear decrease in a target torque level when a state of charge exceeds a threshold value. Rather, Aoki ‘152 merely states that “the engine control processing mechanism sets the limited engine target torque TE_{η}^* as the engine target torque TE^* and drive the engine 11” (see column 30, lines 7-9). In other words, Aoki ‘152 discloses calculation of a limited engine target torque value, which is not a target torque level of an electrical machine. Furthermore, there is no disclosure of any linear decrease a target torque level of an electrical machine, let alone one based on comparison of a state of charge to a threshold value or as output torque of a primary power source increases. For these reasons, a *prima facie* case has not been established and Applicants request that this rejection be

withdrawn. Since claims 18-20 depend on claim 17, Applicants request that the rejection of these claims be withdrawn for the same reasons.


Even if a proper rejection was established for claim 17, a *prima facie* case has not been established for the rejection of claim 18 and 19. In the Office Action, the Examiner referenced the rejections of claims 3-6 to support the rejection of these claims. The limitations of claims 3-6 are not identical to claims 18 and 19. For example, claim 18 recites a “charge torque modifier value” while claim 4 recites “a first adjustment value” and claim 19 recites “selecting an adjustment value” while claim 3 recites “determining a charge torque modifier value.” Thus, a *prima facie* case has not been established since no arguments have been presented that address each and every element of these claims.

Even if a proper rejection was established for claim 17, a *prima facie* case has not been established for the rejection of claim 20. Claim 20 recites that “the first adjustment value is greater than the second adjustment value.” Aoki ‘152 does not recite a first adjustment value that is greater than the second adjustment value. Indeed, there is no disclosure of first and second adjustment values as claimed, let alone a first adjustment value that is greater than a second adjustment value. Moreover the passages cited by the Examiner do not remotely disclose these limitations. Furthermore, the Examiner’s statement that “there are multiple adjustment values wherein as the SOC becomes less, the charge/discharge requirement (which affects the charge torque modifier) becomes greater” is not supported by either explicit or implicit disclosure in Aoki ‘152. Applicants wonder what are these supposed adjustment values? Applicants further wonder what the Examiner considers to be a first adjustment value or a second adjustment value as the Examiner has not pointed with particularity to any element of Aoki ‘152 to define these claim elements. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

Conclusion

Applicants have made a genuine effort to respond to the Examiner's objections and rejections in advancing the prosecution of this case. Applicants believe all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested.

Respectfully submitted,
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